SUMMARY OF

BASIC

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Poly-Traumatized Patient
Shock
Complications of Blood Transf.
Surgical & Hand Infections
Salivary Glands
Swellings
Lymph Node
Surgical Nutrition
Electrolyte Imbalance
Endocrinology
Miscellaneous

if you found it useful kindly share!

ATLS

Management of poly-trauma pt.

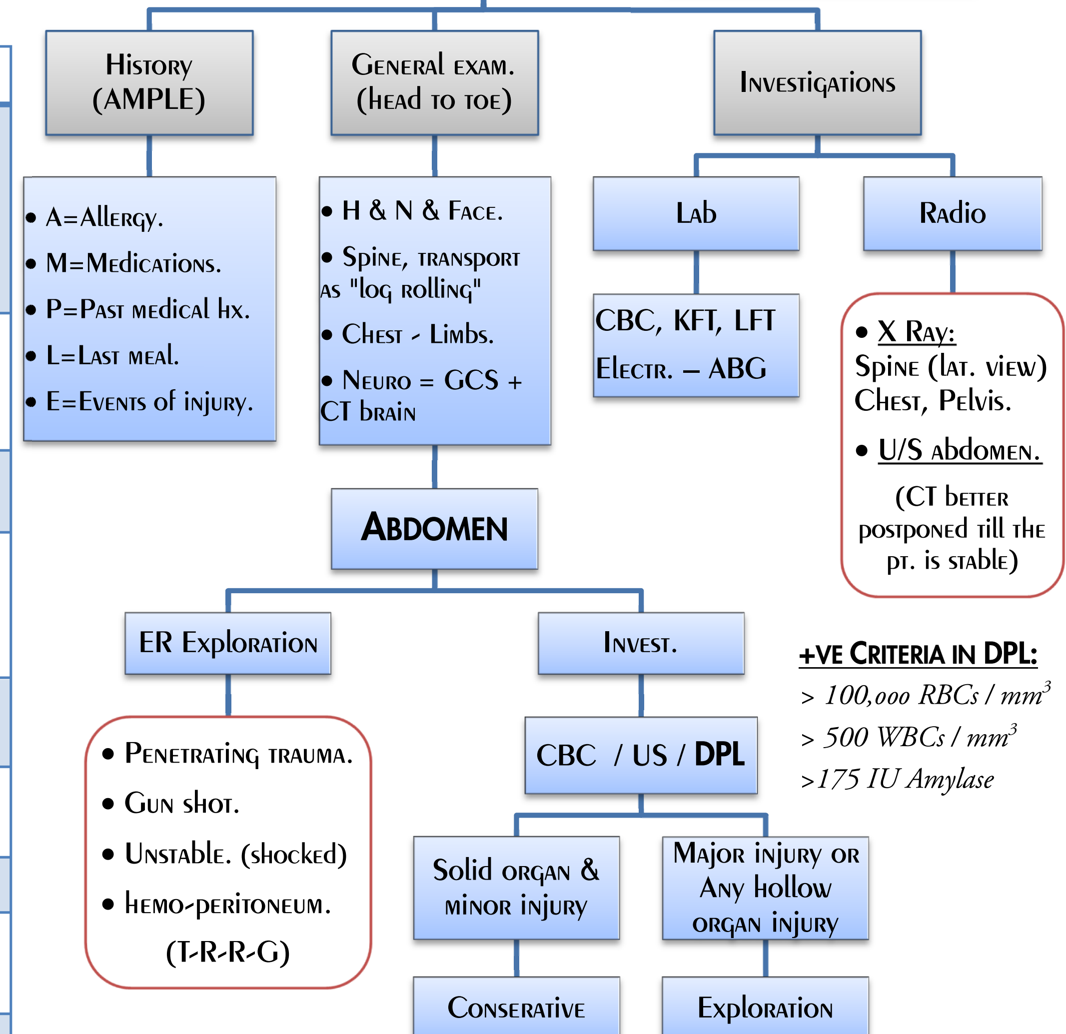
"Q. should be written in any major trauma"

(Air way & breathing only)

1RY SURVEY

Identify & Treat any life threatening condition

	PRE-HOSPITALIZATION (ABCDE)	AT HOSPITAL
Airway: Cx. Spine support	1) Clear airway. 2) Head tilt & chin lift → # if you suspect Cx. spine injury (Cx. Tenderness – MF trauma) → Jaw thrust + Cx. Collar + Never move ! pt. 3) Oropharyngeal tube.	Cricothyroidotomy or Tracheostomy. If failed or there's head injury or M-F trauma → ETT (not routine)
Breathing	1) **Tension Pneumoth.:** →Needle decomp • Engorged neck veins. • Shifted mediastinum. • Resp. distress. • Air blow	**ICT TUBE**
	1) **Open Pneumoth.** → Occlusive dressing Resonant on percussion + ↓ Air entry.	**IC TUBE**
	3) **Cardiac Tamponade at 150 ml** Beck's triad (Engorged NVs, hypotension, ↓HS) → Needle pericardiocentesis	**Pericardiotomy in most of pts.**
	4) **Flail chest** → Paradoxical mov. → strapping Tenderness over a certain segment.	**ETT. (PEEP)**
	5) **Massive Hemoth.** → IC tube dull on percussion + ↓ Air entry	± **Thoracotomy**
Circ.	Explain Classes & management of hypovol. Shock.	
Disability: AVPU	**A** =alert **V**=responds to vocal stimuli. **P** =painful stimuli. **U**=Unresponsiveness.	
Exposure & Env.	Warmth.	Insert 3 انابيب → IV line, foleys, Ryle.



Hypo-volemic Shock

"*Inadequate tissue perfusion → Anaerobic metabolism + M. Acidosis*"

Etiology:

1) **Loss of blood** → Hge. (internal or external)
2) **Plasma** → burns, pancreatitis & peritonitis.
3) **Na containing fluids** → sever NVD, IO, high output intestinal fistula!

Body Response

1) Homeostasis:

- VC of arterioles.
- Platelet plug.
- Blood clotting.

2) Neural: ⊕ of Arterial baro-rs & Atrial strech rs → ↓ the Vagal inhibitory impulses on VMC + ⊕ of sympath. system.

3) Hormonal: CS, RAS, ADH, GH & CA.

4) Trans-capillary re-filling: VC of arterioles → ↓ cap. pr. → cap. refills from the interstitial space.

Changes in Shock

1) μ circulation

Revesrsible phases

A) Compensatory phase: VC of pre-cap. sphincter → ↓ cap. pressure → cap. refills from the interstitial space.

B) Cell distress pahse:

Opening of the A-V shunts
→ deprive tissues from O_2
→ Anaerboic metabolism
→ ↑ metabolites & histamine
→ contraction of post cap. sphincter

Irreversible phases

C) Decompensation phase:

Anoxia & Acidosis
→ relaxation of the pre-cap. sphincter only → accum. of RBCs
→ Stasis → μ thrombi.

D) Failure: Finally the post cap. sphicter will relax → passage of the sludge & μ thrombi to the circ.

2) Cellular derangement:

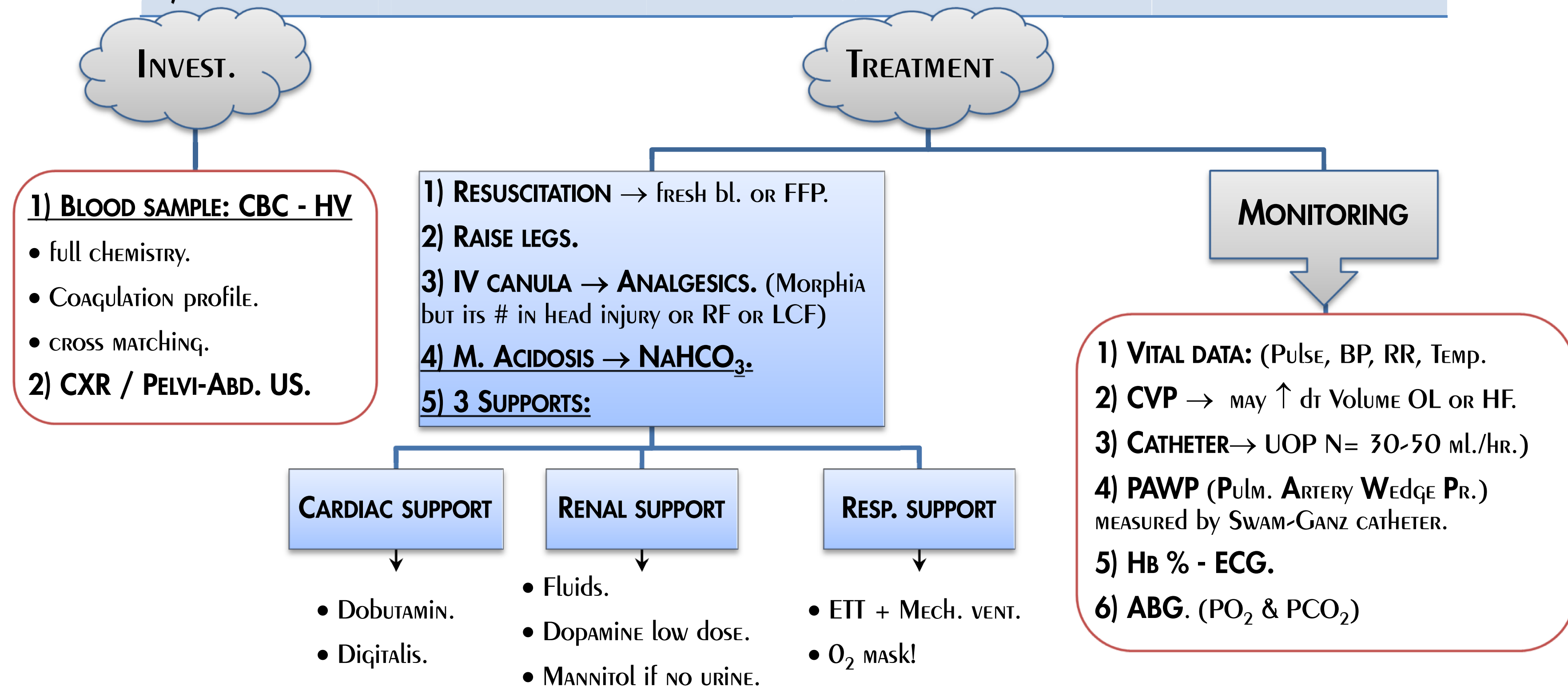
dt failure of Na/K pump → inability of cells to get rid of Na → water retention.

3) Acid-base → M. Acidosis

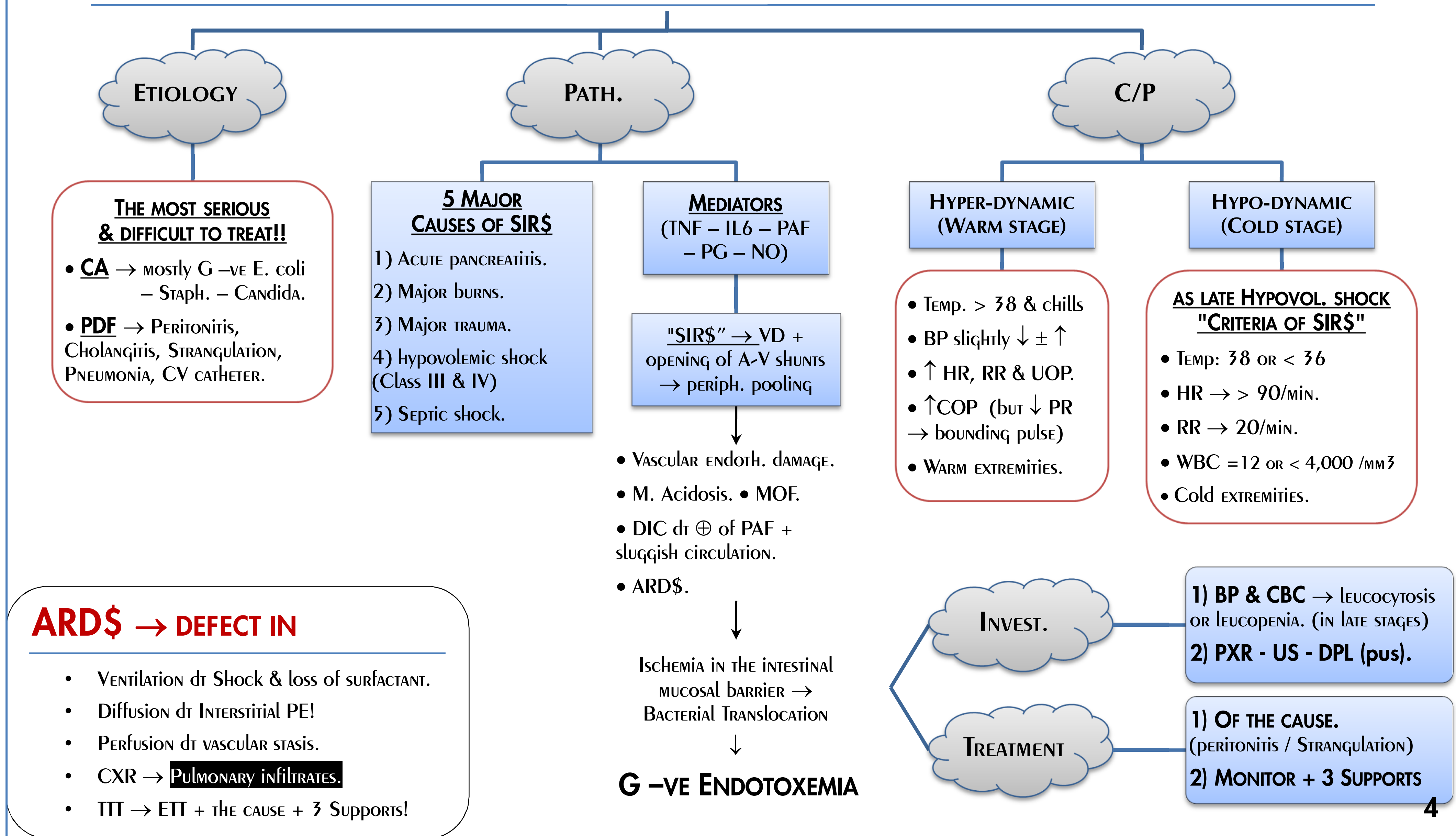
4) Organ → MOF. (Specially Anuria & RF)

Classification & Treatment

	Class I	II	III	IV
1) Blood loss	15 %	30 %	40 %	> 40 %
2) Pulse/min	>90 < 100	> 100	> 120	>140
3) BP	Normal	Normal	low	low
4) RR	14-20 (normal)	20-25	25-30	> 30
5) Urine (ml/h)	30-50 ml/h (normal)	20-30	10-20	0-10
6) Mental status	alert	Anxious	Aggressive & drowsy	Drowsy to unconscious
7) Skin	Normal	Pale & cold	Pale & cold	Pale & cold



Septic "Endotoxic" Shock



COMPLICATIONS OF BL. TRANSFUSION

	PROBLEM	CAUSE	C/P	TTT
EARLY	**FEBRILE REACTIONS (M/C)**	Minor bacterial contamination.	FAHM-R, NV.	1) **STOP TRANSFUSION.** 2) **IV ANTI-HISTAMINICS** & hydrocortisone.
	ALLERGIC REACTIONS	Allergens in the donor blood.	ranging from mild itching & urticarial → up to laryngeal edema & shock	As above
	HEMOLYTIC REACTIONS (M/D)	ABO incompatibility.	**EARLIEST → PAIN AT SITE OF TRANSFUSION.** • Fever, Rigors, NV. • Chest pain, dyspnea & cyanosis. • Hypotension & Tachycardia. • **IF COMATOSED → Bl. tendency.** • **IF SEVER** → Jaundice, DIC, ARF& hemoglobinuria, pain in flanks!	1) **STOP THE TRANSFUSION.** 2) **SHOCK** → IV crystalloids & Steroids. 3) **MONITOR** UOP by **FOLEY'S CATHETER**. 4) **MANNITOL OR ALK. OF URINE** by $NaHCO_3$.
	AIR EMBOLISM		1) **BECK'S TRIAD.** 2) **MILL-WHEEL murmur** over the heart.	1) **O_2 MASK.** 2) **PLACE THE PT. ON HIS LT SIDE** with head down. 3) **ASPIRATION OF THE RV.**
	THROMBOPHLEBITIS in the recipient vein.			
MASSIVE AT 2500 ml blood AT ONE TIME OR 5000 ml OVER 24 HRS	**CHF**	Elderly with sick heart		1) **PACKED RBCs.** (better) 2) **O_2 MASK, LASIX IV, DIGITALIS.**
	HYPER-KALEMIA	dt destroyed RBCs		**GLUCOSE-INSULIN INFUSION.**
	HYPO-THERMIA	Prolonged storage of bl.	Arrhythmia up to arrest	**SPECIAL WARMING UNIT.**
	CITRATE TOXICITY	Binds to Ca.	Acidosis & arrest	**10 ML OF 10 % CA GLUCONATE.**
	COAG. FAILURE	↓ factors V & VIII.	**EARLIEST** → tingling & circum-oral numbness -ms twitches & tetany.	**1 UNIT OF FFP + PLATELETS / UNIT STORED BLOOD.**

C) Late → blood borne infections → avoided by → screening. (CMV is screened for only in special groups!)

NB

Complications of Donor = Thrombo-phlebitis. - hypovolemic shock. (if massive) - Vaso-vagal attack.

Coagulation Defects

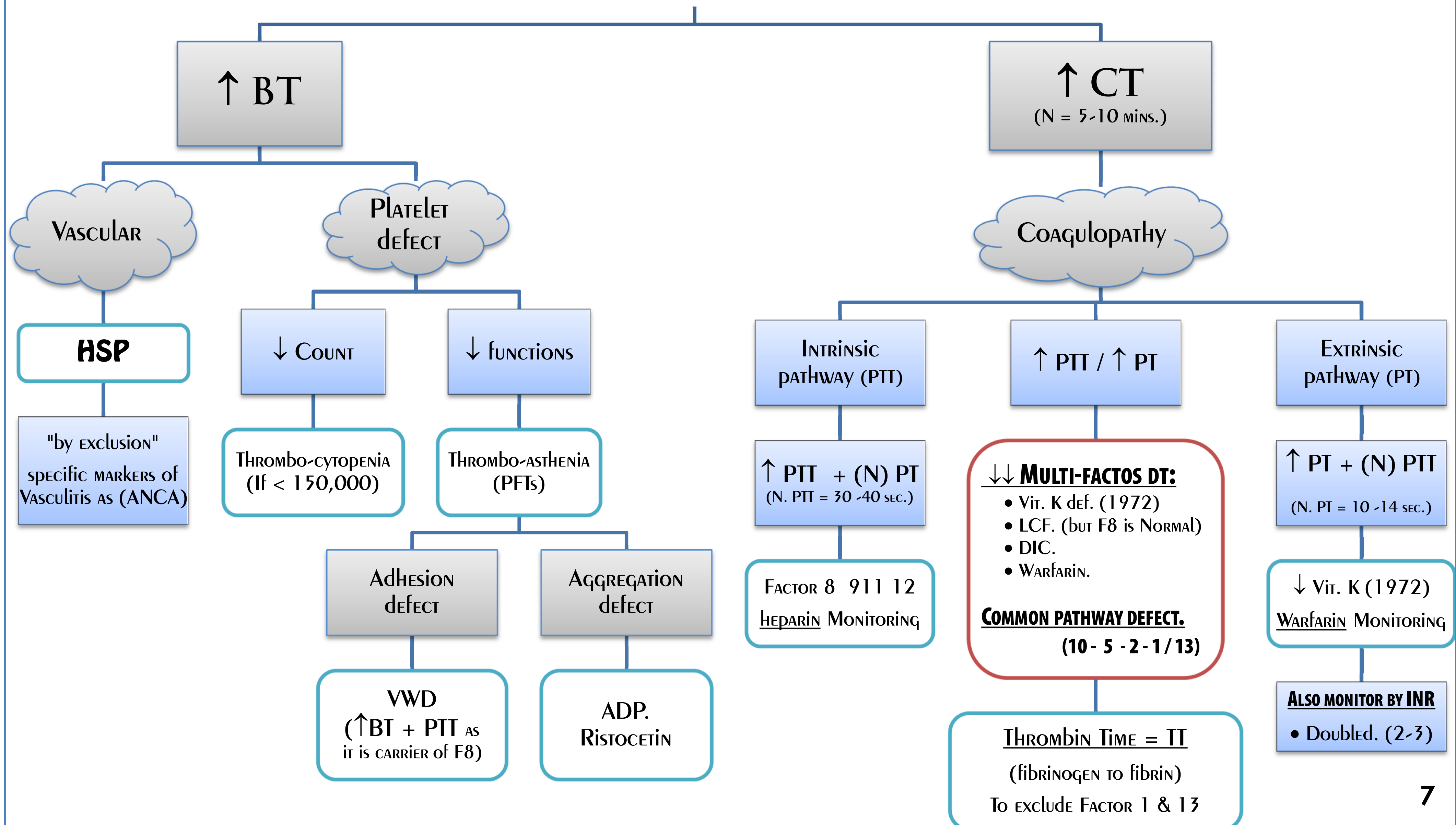
	Intrinsic pathway	Extrinsic pathway
Path.	1) ⊕ by contact of blood with collagen of damaged vs. or table / glass 2) Factor 12 → 11 → 9 → 8 (anti-hemophilic globulin)	Needs tissue factor (T. damage) → F_3 (Tissue thromboplastin from sub-endoth) → combines with (F_7) (pro-convertin) → TF-F_3 complex → + F_5 + in presence of Ca & phospholipids.
Follow up	PTT	PT or INR (0.8-2-3)
Drug that (–) it:	**Heparin & Clexan (LMWH):** "See Vascular"	**Warfarin** "See Vascular"

NB

- Both PTT & PT are normal in platelets or vascular defects.
- Both ↑↑ in case of common pathway defect.
- Acquired defects > inherited defects. (CLD & ITP)
- Protein C & S are vit K dependent / ⊕ by thrombin-thrombomoduline-complex (from endoth) + F 5 & 7 (not 8)

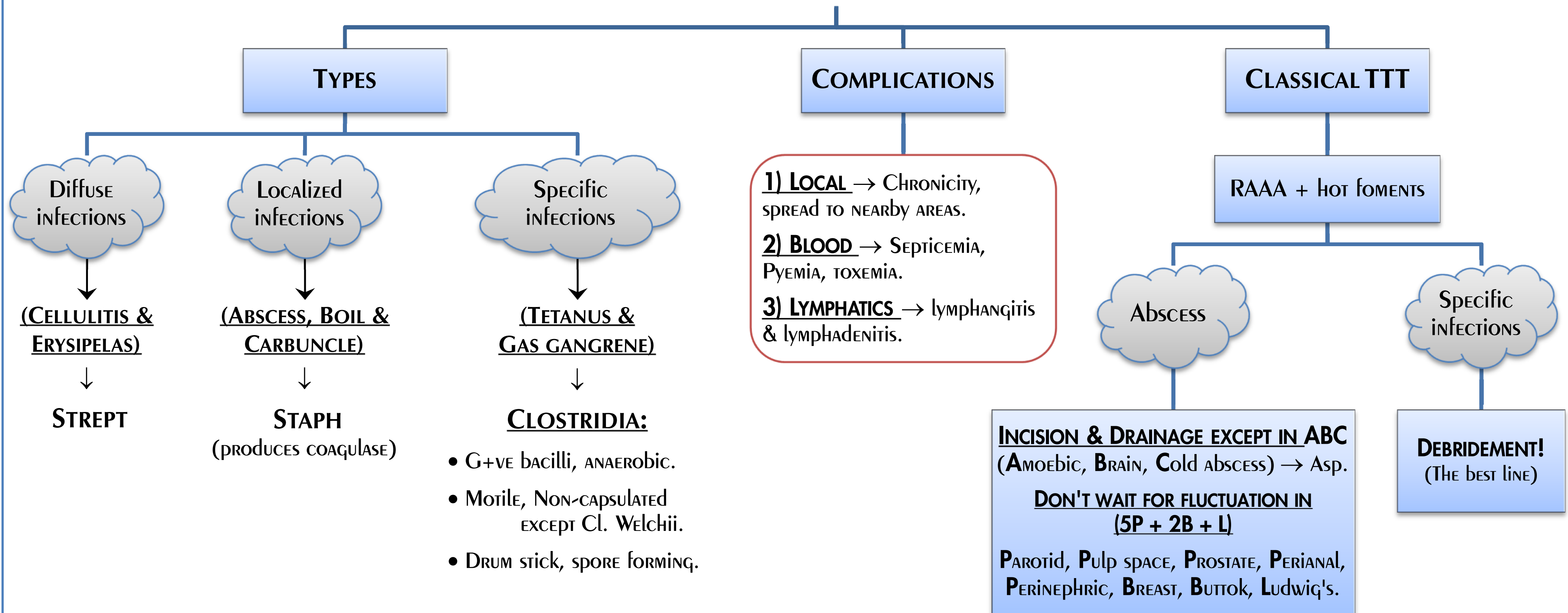
Hemophilia	VWF disease
• M/C inherited Clotting defect. • 2^{nd} M/C bleeding disorder. • A=factor 8 def . B= factor 9 (Christmas factor) • Normal PT & B – Prolonged PTT & CT. • NB: FFP doesn't contain F8 & Fibrinogen.	• M/C inherited bl. disorder. (AD) • Formed by α granules in platelets & endoth. Cells. • Helps in → platelet agg. & carrier for F8. • TTT: 1) **Mild** → Vasopressin or Desmopressin. 2) **Sever** → plasma purified factor 8 or Cryo PPT. (containing more fibrinogen & factor 8)

Investigations for Bleeding Tendency



SURGICAL INFECTIONS

5 cardinal symptoms of inflammation
→ RHTS + limitation of movement



NB:

- M/C anaerobe in colon → **B. FRAGILIS.**
- M/C org. in abd. Abscess → **E. COLI.**
- **BACTEROIDS** → oropharynx, colon, vagina. (not in urinary tract)

FOURNIER'S GANGRENE:

- Idiopathic gangrene of the **SCROTUM.**
- Testis is usually **NORMAL.**
- Can occur in any person, healthy or IC.
- TTT → **DEBRIDEMENT** of the scrotum + Graft or flap.

	Cellulitis	Erysipelas	Abscess	Carbuncle
Def.	Diffuse SC inflammation	Diffuse inflammation of the superf. lymphatics (rarely spreads to the deep ts)	Localized suppurative inflammation	Acute infection of the SC tissue
Etio.	β-hemolytic strept.	β-hemolytic strept.	**Staph.** (coagulase +ve) ROI (from Outside / Near by / blood / lymphatics)	Staph.
C/P	**FAHM + 5 cardinal** • Ill-defined edge. • LN ++, tender, mobile.	**FAHM + 5 cardinal + …** • Active well def. edge. • Raised with vesicles containing highly infective discharge • NB: Erysepilas affects the auricle of the ear, while cellulitis doesn't. (No SC tissue → Millan's sign)	• **Before sup. → as cellulitis.** • **After suppuration → Abscess:** 1) Throbbing pain. 2) hectic fever. 3) Edema of skin overlying. 4) Don't wait for fluctuation. (5P + 2B) **Pathology = 3 zones "mention in any abscess":** 1) *Central zone = Coag. necrosis followed by liquifactive nec. dt release of proteolytic enzymes from leucocytes.* 2) *Intermediate zone = Pyogenic membrane = granulation t. forms a protective layer against spread of bacteria & toxins.* 3) *periph. zone = Acute inflam.* ➢ **Write the path. of Amoebic & Cold abscess.**	**Site: Nape of Neck (M/C) or Dorsum of hand, Lips, Cheeks!** **General → Sever toxemia** **Local →** Painful dusky red swelling, at 1st indurated then softens at ! center → Multiple pastules appear → Open with multiple sinuses → Discharging pus → Cribriform appearance!
Comp.	Scheme + Rheumatic fever or GN	Scheme + Rheumatic fever or GN & CST if affects the face!!		Scheme+ CST, Necrotizing fascitis & infective gangrene!
TTT	RAAA (Penicillin) + hot foments	RAAA (Penicillin) + hot foments	Before suppuration → as cellulitis	↑ GC + ABS acc.to C&S + Debridement

Incision & Drainage under GA

"Not LA due to infection + opens new planes helping in spread"

Incision

1) Long dependent incision.
2) Never crosses the skin crease.
3) Parallel to vs. & nerves.
4) Hiltons' method in: neck, axilla, parotid, breast.
5) Break the septa by finger.
6) PO dressing.

Drainage

Chronic abscess → Excision.
Write Indications of ABC abscess asp. + it's tech.

Parotid	Breast	Perianal
Longitudinal. skin incision. *Open the fascia transversely* *→ introduce a closed sinus forceps* *→ open transv. → withdrawn semi-opened,* *→ rubber drain is inserted semi-opened!*	Radial or circum-areolar incision over the most tender area • *Finger to break the septa.* • *Counter incision is a must in a non-dependable area*	Lithotomy pos. + Cruciate incision • *Finger to break the septa.* • *Perianal fistula → laid-open.*

	TETANUS	GAS GANGRENE
ETIOLOGY	**CLOSTRIDIA TETANI** secretes Tetanoplasmin (Powerful Exotoxin) → Anti-choline Estrase ↓ sustained tonic contr. dt ⊕ of AHCs. → hyperexcitability ↓ Convulsions **PDF** • Deep wounds + ↓ bl. supply. • FB, blood clots, necrotic t. • Pyogenic infection. • T. anoxia dt shock or Hge.	**Sacrolytic group "Lecithenase"** → Hemolysis & Thrombosis + necrosis of ms → Acts on ms. glycogen → CO_2 & H_2 (gases → paves the way to.. **Proteolytic group** **Cl. Welchii** secrets exotoxin → Acts on ms proteins → NH_3 + H_2S + Iron → offensive odour & black colour (F_2S)!
IP	very variable (2 – 21 days)	up to 48 hours
C/P	**Incubation Period** • Low grade Fever. (± subnormal dt septic shock) • Tachycardia. • Ms. twitches at the wound. **Tonic contractions in a desc. manner** • Trismus. (lock jaw) • Risus sardonicus. • Painful neck stiffness. • The whole body. **Clonic spasm: Convulsions** • On minor stimuli. • Opisthotonus. • Tonic ms rigidity inbet. convulsions.	**GENERAL** • Low grade Fever. (± subnormal) • Tachycardia. • Dry tongue, Jaundice dt hemolysis. **LOCAL** • Burning pain, Dark red, offensive discharge, crepitus. • Skin → pale or purple. • Ms → black & lose it's contractile power.
COD	hyperpyrexia / Resp. failure / HF / Asphyxia / M. acidosis.	Septicemia & Septic shock!
	DD = Strychnine poisoning (free in bet. attacks) – Meningitis – Tetany – Rabies.	**INVEST.** = X-ray → gas. / C&S→ Nagler's test.
PROPH.	• **Active →** DPT at 2,4, 6… booster at 1.5 ys, 5ys & every 10 ys. (0.5 ml) • **Passive →** TIG to wounded pts. with no active immunity or incomplete vac. / or history of last booster dose > 10 ys.	• **Active →** Penicillin G. • **Passive →** Anti-gas gangrene serum.
ACTIVE TTT.	1) TIG in large doses. (3000 IU) 2) Penicillin G. 3) Ms Relaxants + Mech. ventilation. 4) DEBRITMENT. (most important) 5) Efficient nursing → dark room, nutrition, rectum & bladder. **CL. VARIANTS = 6 (3 X 2)** 1) ACUTE FULMINATING. *(IP < 2days)* 2) CHRONIC TETANUS. *(Incomplete vac. + long IP)* 3) POST-OP TETANUS *dt inadequae sterilization of cat gut or instruments.* 4) TETANUS NEON *dt infected umbilical stump.* 5) CEPHALIC *dt face or scalp wound.* 6) CRYPTOGENIC *dt puncture.*	1) Penicillin G in large doses. (10 – 40 million IU / day) 2) Hyper baric O_2. 3) Massive Debridement + H_2O_2. (most important) 4) Amputation in extensive cases above level of the gas. 5) Anemia & Jaundice → Blood transf. 6) Anti-gas gangrene serum. (the least imp.)

Hand Infections

	Anatomy (Boundaries)
Paronychia	In the hidden part of the nail bed. **(M/C)**
Pulp space	Felon-Whitlow. **(2nd M/C)**
Web space	From the distal palmar crease to the base of the fingers.
Deep mid palmar	• **Ant.** → flexor tendons & lumbricles. • **Post.** → Bone & interossei. • **Lat.** → fascial septum extending from the palmar aponeurosis to 3rd MC. • **Med.** → .... to 5th MC.
Thenar space	• **Ant.** → flexor tendon. (F. Polices Longus) • **Post.** → Adductor polices. • **Lat.** → fascial septum extending from the palmar aponeurosis to 1st MC. • **Med.** → .... to 3rd MC.
Parona space	(FOREARM) In wrist between the flexor tendons & pronator quadratus.
Teno-synovitis	1) **<u>Synovial sheath of the mid. 3 fingers</u>**: from MCP to the base of dx. phal. 2) **<u>Thumb & little fingers:</u>** from the base of distal phalanges…then?? *Communicating in 75% of cases* a) **<u>Radial bursa:</u>** contains FPL tendon & continues with the synovial sheath of thumb to end 3 cm px. to the dx. crease of wrist. b) **<u>Ulnar bursa:</u>** contains tendons of ! other 4 fingers (wider) & continues with the synovial sheath of ! **<u>little</u>** finger to end 4 cm above the wrist.

General Scheme

- **<u>Etio.</u>**
  - <u>CA</u> → Staph.
  - <u>Route</u>
    - Direct abrasions.
    - Spread from nearby space.
    - Rarely blood & lymphatics.
- **<u>C/P</u>**
  - FAHMR + Dorsal edema
    - except paronychia & pulp space. (narrow)
  - 5 cardinal = RHTS + Limited painful mov.
  - DEFORMITY. (VIP)
- **<u>Comp.</u>**
  - a) **<u>Direct</u>** → to nearby space.
  - b) **<u>Blood</u>** → Toxemia, Pyemia, Septicemia. (except in paronychia & pulp space)
  - c) **<u>Lymphatics</u>** → lymphadenitis & lymphangitis.
- **<u>Invest</u>**
  - PXR only in pulp space inf. → Osteomyelitis?
- **<u>TTT</u>**
  1) **RAAA + hot foments.**
  2) **<u>Incision?? + Drainage under GA:</u>**
     - Never wait for fluctuation.
  3) **<u>Post op. care:</u>**
     - Drain is left for 48 hrs. <u>by tull grass.</u>
     - <u>Dressing / 24 hrs.</u>& If soaked or fever → early dressing + ABS.
     - Hand is put to position of max. **<u>rest</u>**? except paronychia & pulp. (no need)

TABLE OF HAND INFECTIONS

	PARONYCHIA	PULP SPACE	WEB SPACE	DEEP MID-PALMAR	THENAR SPACE	TENOSYNOVITIS
ETIOLOGY: • Scheme. • Nearby space.	Mostly direct	Mostly from the distal volar **(FELON – WHIT LOW)**	**ALWAYS 2RY TO INFECTION:** Callosities, infected blister. **NEAR BY SPACES:** • Adjacent web space. • Proximal volar. • DMP & Thenar space via the lumbricle tunnel.	• Pulp space. M/C) • Web & Th. space. • Tenosynovitis.	Mostly from DMP & Web space.	
CL./P **SCHEME + DEFORMITY**	No FAHM or dorsal edema. No Deformity.	No FAHM. **LOSS OF PULP RESILIENCE.**	**WIDE SEPARATION** of the related finger	Semi flexion of the med. 3 fingers **(FROG HAND AS TENO-SYNOVITIS)**	• Ballooning of ! Thenar eminence. • Abd. of thumb.	1) **MIDDLE 3 FINGERS** → semi-flexion → **HOOK SIGN** (as frog sign of DMP) point of max. tenderness at cul de sac 2) **THUMB OR RADIAL BURSA** → flexion of thumb. 3) **ULNAR** → flexion of med.3 fingers. **KANAVAL'S SIGN:** Area of max. tenderness bet. the 2 palmar creases
COMP. *Direct spread to nearby space*	Lymphangitis & lymphadenitis Subungual abscess	Osteomyelitis of terminal 2/3 of the dx. phalanx	• See above			
TREATMENT = SCHEME + DRAINAGE INCISION??						
1) **IF EARLY → ABS + REST** 2) **IF ON 1 SIDE** →V-shaped incision. 3) **IF ALL AROUND** → **CURVED INCISION** → rectangular skin flap is reflected px. → drainage. 4) **IF PUS UNDER NAIL BED. (SUB-UNGUAL)** → Excision of px. 1/3 of the nail.		**EARLY:** straight incision **LAT.** to the pulp. **LATE:** counter incision. **HOCKEY STICK INCISION** for Sequestrectomy in case of Osteomyelitis.	**TRANSV. INCISION** on the palmar surface of web 1 cm from the free margin at the site of max. tenderness to avoid inj. of digital vs. & ns. **AFTER DRAINAGE → PRESS ON PALM** → pus comes out → drain the DMP space.	**TRANSV. INCISION** of the web1 cm from the free margin at the site of max. tenderness! **+ COUNTER INCISION** over the web space if its affected!	**CURVED INCISION** at the lower border of the 1st interosseus on the dorsal aspect ↓ Sinus forceps introduced for Drainage	1) **MIDDLE 3 → 2 TRANSV. INCISIONS**, 1 at MCP (cul de sac) & the other over DIP joint + **URETERIC CATHETER IRRIGATION** by Saline & ABS. *"If persistent discharge = Tendon necrosis → Excision + trans-fixation of the px. part to avoid spread of infection"* 2) **RADIAL BURSA →** incision along the ulnar side of ! thenar eminence 4 cm dx. to distal crease of wrist. 3) **ULNAR BURSA→** incision along the radial side of the hypoth. eminence **HENERY'S INCISION?!**

Salivary Gland

<table>
<tr><th></th><th>Salivary Stones</th><th>Ranula</th><th>Acute Parotiditis or Abscess</th></tr>
<tr><td>Etio.</td><td>

- **Mostly Radio-opaque.**
- **PDF:** mucinous secretions, ↑Ca content, independent drainage of the duct → Mainly SM

<table>
<tr><th>Parotid</th><th>Sub-Mandibular</th><th>Sub-Lingual</th></tr>
<tr><td>80 % RL</td><td>60 % RO</td><td>80 % RO</td></tr>
</table>

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- Extravasation or Retention cyst arising from a damaged SL or minor saliv. gland.
- **Simple type** → on 1 side of the floor of mouth & may cross the midline.
- **Thompson's** = Plunging ranula → swelling escapes below myo-hyoid ms to the SM region.

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1) **Viral:** Mumps, in Childhood, bilat. & self-limited → Orchitis, pancreatitis & enceph.
2) **Bacterial = Suppurative due to:**
   - Stone. (v. rare)
   - **Post op. (M/C):** Staph. Reaches the gl. via the duct dt stasis of salivary sec.
   - Sialo-ectasia.

</td></tr>
<tr><td>C/P</td><td>

Pain + Attacks of salivary colics
(esp. on sour food Never Dryness)

Signs:

- Tender SM swelling.
- Orfice of duct is congested & edematous.
- Stone palpated in the duct from inside of mouth.

Invest:

1) PXR (panoramic view) → mostly RO.
2) Sialography → filling defect.
3) CT but no US. (parotid is behind the mandible)

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Fluid swelling in floor of mouth:

- Doesn't cross midline dt frenulum of tongue.
- Bluish, translucent & vs. run over its surface.
- Crossed by the SM salivary duct.

</td><td>

- FAHM + RHTS in parotid region.
- **Raising the ear lobule.**

Complications = Parotid Abscess:

- Throbbing pain.
- Hectic fever.
- Overlying skin edema.
- Don't wait for fluctuation

"Write pathology of abscess"
(see abscess)

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<tr><td>Compl.</td><td>

- Acute sialoadenitis & SM abscess. (see above)

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<tr><td>DD</td><td>Submandibular LN. (multiple , rolled over the jaw)</td><td></td><td>Swelling in Parotid region (see b4)</td></tr>
<tr><td>TTT.</td><td>

1) **Stone in duct** → Incise + remove it under LA.
2) **In gland or Recurrent** → Sialoadenectomy.
3) **Abscess** → incision (parallel to the lower border of the mandible) → Drainage + ABS.

</td><td>

1) **Marsupialization (de-roofing)** = Suturing the cut edge to the mucosa of floor of mouth → cavity becomes part of the floor.
2) **Complete Excision.** (difficult dt friable wall)

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1) **Acute sup. → RAAA.** (Clindamycin dt its ↑ conc. in salivary secretion)
2) **If no response > 48 hrs = Abscess** →Blair's incision & Hilton's under GA.

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Parotid Gland

Tumors

Benign

1) Pleomorphic. (80%)
2) Monomorphic Adenoma. (Adenolymphoma = Warthin's Tumor)

Malignant

Low grade

- Adenoid Cystic Carcinoma.
- Low grade muco-epidrmoid carcinoma.

High grade

1) high grade Muco-epidermoid carcinoma.
2) SCC. (Worst prog.)
3) Adenocarcinoma.
4) Lymphoma.

Swelling in Parotid Region

1) Skin & SC tissue	Sebaceous - **Dermoid** - **Lipoma.**
2) Parotid LNs	Lymphadenitis – Lymphoma.
3) Parotid gland	a) Acute & Ch. Sialdinitis. b) Tumors. c) Sjogren's disease.
4) Mandible & Maxilla	a) Admantioma. b) Sarcoma or Osteoclastoma. c) Osteo-myelitis. d) Hypertrophy of masseter.

	Parotid	Submandibular	Sublingual
Secr.	Serous	Mucus	The most Mucus
Main ds.	Tumors 80%	Stones	Ranula
Tumors	Mainly Benign. 80% (80% pleomorphic adenoma)	70 % Benign	Mainly Malig.
Stones	80 % RL	60 % RO	80 % RO

Minor salivary glands → 95% malignant

	Pleomorphic Adenoma (Mixed Salivary Tumor)	Monomorphic Adenoma (Adeno-Lymphoma = Warthin Tumor) "Papillary Cystadenoma Lymphomatosa"	Adenoid cystic carcinoma
Age	20 – 30 ys. / Equal sex (M/C 80 %)	40 ys. / males	Low grade malig. tumor
Origin	Benign tumor arising from the epith. of the parotid	Ectopic parotid t. in parotid LNs inside ! gl.	
MAC	• Unilateral, affecting the superf. lobe mainly. • Well defined. • Incomp. capsule → μ-infilt. & satellite lesions (multi-centeric)	• Superficial lobe. • 10 % bilateral. (as Wilm's & Pheochr.) • Complete capsule.	• hard, irregular. • Spread → Direct & lymphatic → upper & lower deep Cx. LNs "perineural spread = early pain to ear"
Mic	• Cuboidal to Columnar cells arranged in sheets. • CT stroma with myxomatous degeneration as cartilage. • "Adenoma with pleomorphic stroma"	Columnar cells forming tubules containg creamy material → Cystic lymphocytic infilt. → the only mass in parotid appears hot by Tc	Anastomosing cords, arranged in cylinders, filled with mucin.
C/P	**Painless Swelling:** • **Site** → Parotid region. (painful if capsule is distended) • **Size** → Moderate. • **Shape** → Oval. • **Surface** → Smooth. • **Special ccc.** → Raising the ear lobule • **Skin overlying** → Normal. • **Consistency** → Firm to hard. • **Edge** → well defined. **Malig. transf. in 2-3 % = 4 criteria:**	✓ but Consistency = Solid with cystic degeneration. (cystadenoma) Never turn malignant.	**Pain then Swelling (Malig. Criteria)** **(LN metastasis)** • **Site** → Parotid region. • **Size** → Variable. • **Shape** → Irregular. • **Surface** → lobulated. • **Special ccc.** = VII n. palsy. • **Skin overlying** → Ulceration & induration. • **Consistency** → Stony hard.
Invest.	1) CT scan → confirm + asses operability + benign from malig? 2) Tc scan → cold 3) No open biopsy to avoid VII n. injury ± only FNAC U/S guided	The same but hot nodule by Tc dt lymphocytic infiltration.	✓
TTT.	**Excision only isn't enough!!!** 1) Superf. lobe → Superf. Conservative parotidectomy. 2) Deep lobe → Total Conservative parotidectomy.	1) Superf. Conservative parotidectomy. 2) Excision!	**Total Radicle Parotedectomy** (don't conserve VII) + modified radicle neck dissection → Post op. Radio.

Biopsy is controversial in:
Parotid, Pancreas, HCC & RCC!

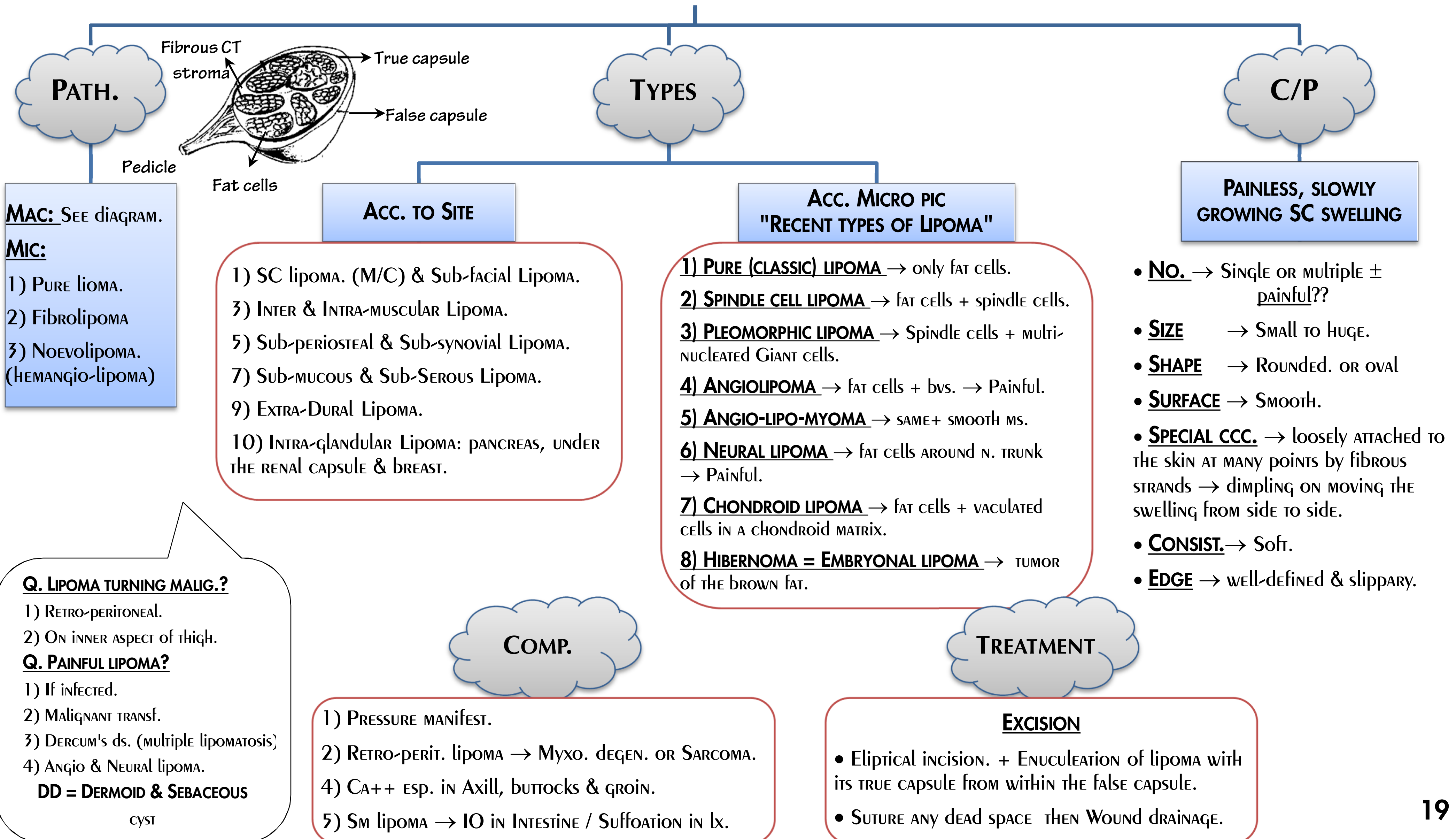
	Dermoid Cysts				Sebaceous (Epidermoid/ Pilar cyst)
	Sequestration Dermoid	Implantation Dermoid	Thyro-glossal cyst	Branchial cyst	
Etiology	**Congenital sequastration of epith. into the SC tissue** in fetus at the lines of fusion:	**Acquired implantation of skin in SC t.** on top of pricking wound or Skin graft	**Un-obliterated Thyroglossal duct.** *(from foramen cecum → thyroid isthmus + med part of lobes)*	**Persistent Cx. sinus** or incomp. fusion of the 2nd & 5th arches. (Clefts – Ectoderm)	**Retention cyst of sebaceous gl.** dt obst. of duct by sebum, scarring!
Path. (Site)	• Eye → ext. angular (M/C) & int. angular. • Midline of neck & trunk. • Pre & post. Auricular NEVER IN LIMBS	• Tips of fingers. • Sites of scars.	**Mid-line at hyoid bone** • Sub-hyoid. (M/C) • Thyroid. (on 1 side) • Supra-hyoid.	• Upper part of neck. • CAROTID triangle. • Partially superf. & partially deep to St. Mastoid.	• Hairy areas. (M/C scalp swelling) • Never palm or sole.
Content	Sebum	Sebum	Sebum	*(Vaginal hydrocele, dental & dentigerous)* Mucous+ **Cholesterol Crystals**	Sebum
Micro	• lined by stratified sq. epith. • Outer fibrous layer.	✓	lined by colum. epith. + fibrous cord conn. it to hyoid bone	✓+ lymphoid t. + fibrous cord passing bet. ECA & ICA conn. t to phx.	✓
C/P: Age	Child (dating since birth)	Adult manual worker	Child (6-8 ys.)	Although cong., it appears at 20 ys.	
Complaint: • Gradual, prog. • Painless swelling (unless infected)	**As scheme +** • Lax cystic. • Not attached to skin. • Trans opaque.	**As scheme +** • Related to scar. • May be painful.	• Cystic & moves up & down with deglutition & tongue protrusion. • Palpable tract from hyoid to base of tongue.	Tense cystic, smooth & well defined • More prominent on cont. of Sterno-mastoid • Compressible –pulsating.	Tense cystic, smooth & rounded • Attached to skin at punctum. • Discharge sebum on Sq.
Comp.: Inf.– Rupture – Hge – Pr. – Recurrence.	IC connections.		**Thyroglossal Fistula (always acquired)**	• Adenocarcinoma. • **Branchial Fistula:** Acquired or Cong. (see below)	• Local baldness. • Cock's Peculiar tumor. • Sebaceous horn.
DD: Other swellings	Sebaceous	Sebaceous	Ectopic thyroid gland	1) Cold abscess → caseation on asp. 2) Swellings on lat. side of neck. 3) Cysts containing cholesterol crystals.	Dermoid.
Invest: U/S +	X-ray + CT skull		Fistulogram	Aspiration + Fistulogram	
Treatment	Excision & if infected → incision & drainage → then excision		**Sis-trunk operation** (cyst + trunk + central part of hyoid bone)	**Complete excision via "Step-ladder" incision**	Elliptical incision

	THYROGLOSSAL FISTULA	**BRANCHIAL FISTULA**	
		ACQUIRED	**CONGENITAL**
ETIOLOGY	**ALWAYS ACQUIRED & NEVER CONG. DT:** 1) Incomplete excision of thyroglossal cyst. 2) Rupture or incision of …..	• Incomplete excision of branchial cyst. • Rupture or incision of	Failure of fusion between the 2nd & 5th Pharyngeal arches.
PATH.	• **Track is tortuous** & intimately related to the **hyoid bone** but not posterior. • Moves up & down with **deglutition & tongue protrusion.** • Tack is felt **above the fistula**. (pathog.)	**THE SAME AS BRANCHIAL CYST!**	
C/P	**1. DISCHARGE MUCOUS BUT IF INFECTED IT DISCHARGE PUS**		
	2) HX. OF PRE-EXISTING CYST	**2) APPEARS SINCE BIRTH**	**2) HX. OF PRE-EXISTING CYST**
	3) **Fistula opens** in the **midline of neck** below hyoid bone. 4) Overlapped by a **transv. cresenteric skin fold**. (pathog.)	3) Fistula opens at **lower 1/3** of ant. border of sternomastiod 4) Tract passing **bet. ICA & ECA** in the fossa of Rosen-muller. 5) **LINED BY** → sq. epith & lymphoid tissue	3) Fistula opens at **upper 1/3** of ant. border of sternomastiod
INVEST.	Thyroid scan	Fistulogram	
TTT	1) **COMPLETE EXCISION VIA SIS-TRUNK OPERATION:** (Excision of Cyst + Fistula + track upto tongue base + middle 1/3 of hyoid bone) 2) **IF IT'S THE ONLY THYROID T.** → L-thyroxin after excision.	**COMPLETE EXCISION VIA "STEP-LADDER" INCISION**	

	Desmoid Tumor	Carotid Body Tumor (Potato Tumor)	Simple Ganglion	Compound Palmar Ganglion
Origin	**Locally malignant tumor. from Rectus ms or sheath.** (musculo-fibro-aponeurotic)	Chemo-Rs at the bifurcation of the CCA	Myxomaotus degen. Of fibrous t. in relation to tendon sheaths.	TB. synovitis of ulnar bursa
Etiology or Site	**Fibrosarcoma. (non-capsulated)** • MP female. (lower abd. wall) • Trauma – part of Gardner's $.	• Benign mainly. • Metastasis only in 20 %	• Dorsum of wrist? • Around the ankle?	• Palm ± Thumb or little finger. • Distal part of the forearm
C/P	**Swelling** - **Site** → lower abd. wall. - **Size** → Variable. - **Shape** → Irregular. - **Surface** → Nodular. - **Special ccc.** → Moves across but fixed on ms. contraction. - **Consist.** → hard. • **Edge** → Ill- defined. • **Comp.** → Recurrence even after adequate excision.	**Painless swelling** - **Site** → Carotid triangle. (upper part of ant. Triangle of the neck) - **Size** → Variable. - **Shape** → Oval = POTATO LIKE - **Surface** → Smooth. - **Special ccc.** → Transmitted pulsations → DD: Aneurysm expansile pulsations. - **Mobility** → Hz. not vertically - **Consist.** → hard. - **Edge** → well defined.	**Cystic swelling** - **Site** → CB4 - **Size** → moderate. - **Shape** → rounded. - **Surface** → smooth. - **Special ccc.** → when the adj. tendon contract → cyst becomes restricted & more tense. - **Consist.**→ Tense cystic. - **Edge** → well-defined.	**Cystic swelling** - **Site** → CB4 - **Consist.** → fluctuant. - **TB toxemia** Ganglion in a typical site
Invest.	CT scan & MRI.	1) **Carotid angio (most diag.)** to diff from aneurysm + ICA infiltrated? 2) **Wide sep.bet. ECA & ICA** + highly vascular structure in-between. 3) **Spiral CT or MRI.**		
TTT	Wide local excision→ from origin to insertion + add a mesh!	Excision with preservation of ICA, if not possible → graft!	Excision under full aseptic tech. in a bloodless field & under GA.	- Anti-TB drugs. - Immob. in plaster of paris. - Complete excision.

Lipoma

Benign tumor of Adipose tissue



LYMPHOMA

	HODGKIN'S LYMPHOMA	NON-HODGKIN'S
INCIDENCE	15 %	85 % (More common)
AGE	1st peak at 15 – 35 ys. / 2nd peak at >50	60-65 ys
SITE	Left lower deep cervical LNs	the same
MAC.	Painless progressive LN ++, Rubbery & Discrete.	the same
MIC.	**REED STERNBERG. (MULTI-NUCLEATED GIANT CELLS)** • Lymphocytic predominance. (best prognosis) • Lymphocytic depletion. (worst prognosis) • Nodular sclerosis. (most common) • Mixed.	• B-cell lymphoma. (M/C) • T-cell lymphoma. • Lymphoblastic. • Histiocytic.
CL./P	**AS MAC** + pain on drinking Alcohol + **RESPECT ANATOMY**.	**NON-ANATOMICAL**
(B) SYMPTOMS	• 40 % • **PEL-EBSTEIN FEVER** =intermittent, last for few days followed by remission.	(B) SYMPTOMS = 20 %
EXTRA-NODAL	Less common	More common: • GIT → Gastric & intestinal lymphoma. • Skin eruption → Mycosis fungoides.
INVEST.	1) CBC → Anemia, Eosinophilia & lymphopeina. 2) ↑ LDH & ESR 3) LN Biopsy → Diagnostic from lt. lower deep cx. LNs. 4) Staging → CT scan & MRI / Staging laparotomy. "obsolete"	
STAGING & TREATMENT	**a) NO SYMPTOMS = (A)** **b) SYSTEMIC SYMPTOMS = (B) = 2N 2L + PRURITIS.** **c) IF EXTRA-LYMPHATIC SITE IS AFFECTED = (STAGE E)** • **STAGE 1 + 2A → 1 GROUP OF LN** → Radio a) If LNs above diaphragm → mantle tech. b) If below diaph. → inverted Y technique. • **STAGE 2B → 2 OR MORE ON THE SAME** side of diaph. → Radio therapy. • **STAGE 3 → ON BOTH SIDES ± SPLEEN** → Radio & Chemo therapy. (MOPP or ABVD) • **STAGE 4 → DISSEMINATED** → liver, lung, BM → Radio & Chemo therapy.	Radio & Chemo th. (CHOP regimen)
PROGNOSIS	**BETTER**	**WORSE**

TB LYMPHADENITIS

	FIBRO-CASEOUS LYMPHADENITIS	BLOOD BORNE - DISSEMINATED
SITE	Lt. upper deep Cx. LNs (M/C) others → mediastinal, mesenteric (from ingested milk)	Many groups
PATH.	LYMPHATICS REACH THE LNs THROUGH THE CAPSULE → Peri-adenitis. → Central caseation. → Matted together. (DD with branchial cysts) → Cold abscess → sinus.	BLOOD REACHES THE CENTER OF LN • No peri-adenitis. • No matting. • No central caseation. • No cold abscess → No sinus.
C/P & COMP.	YOUNG AGE: TB TOXEMIA: • Not warm or tender. • Firm or elastic. • Matted together. • Cold Abscess → slightly warm & tender, soft & fluctuant, overlying skin is at 1st normal then dusky. • Beaded cords bet. diff. LN groups dt thickened TB lymphadenitis.	OLD AGE: TB TOXEMIA (2N 2L) • Not tender. • Rubbery. • Discrete. • Mistaken for HL → Lymphadenoid type of TB.
INVEST	• CXR. • Tuberculin +ve. • LN Biopsy. • Asp. of abscess → LJ culture or ZN stain.	• LN Biopsy.
TTT.	ANTI TB FOR 9MS. (RIFAMPICIN + INH) + 1) ABSCESS → Asp. through an independent part in a valvular manner • Streptomycin injection after asp. • If 2ry inf. → pyogenic abscess → Incision. 2) SINUS → Streptomycin powder / 3 days. → If resistant → Excision with underlying LN.	ANTI TB

Surgical Nutrition

	Entral	Parentral
Def.	Through a tube inserted in the proximal GIT.	A catheter inserted in a Central vein. (sub-clavian or IJV)
Types	Supplemental or Total.	Partial or Total. (TPN)
Indications	• Low output fistula. (<500 ml/d) • Comatose. • major head or neck surgery • Sever dysphagia. • Critically ill.	• high output fistula. • Intestinal failure. • Paralytic ileus. • sever acute pancreatitis / sever IBD. • Radiation enteritis.
Route of adm.	**NGT or...** **Feeding gastrostomy**: • Easier. • Liquid of blundered food. • Open or PEG. **Feeding jejunostomy**: • More difficult. • Initial isotonic saline at slow rate. • Open only. • Stomach ds, sever GERD, impaired emptying.	**Central line (IJV or subclavian)**: • L-AAs & some electrolytes. • 25 % glucose + insulin. • hyperosmolar. **Peripheral line**: • Inter-lipids. • isotonic.
	Advantages	Disadvantages
	1) Preserve the gut mucosa →no stress ulcer or bacterial translocation. 2) Easy, safe & less expensive. 3) ↓ Incidence of cholestasis.	**Of the TPN:** 1) Over or underfeeding. 2) hyponatremia, hypokalemia, heyperosmolar dehydration 3) Failure of gut barrier → bacterial translocation → SIRS. 4) Cholestasis & jaundice. **Of the Catheter:** 1) **Mal-placement** → hemo or pneumothorax → so CXR should be done after insertion. 2) **Air embolism.** 3) **Thrombophlebitis → septicemia** • Unexplained fever for 24 hrs. • Remove the catheter & send the tip for C&S • Start ABS till the results. • Insert a new line in a new site. 4) **Injury to arteries or Ns.** (brachial plexus)

Electrolyte Disturbance

1) Body water:

- 70 % of the BW of neonate.
- 60% of the adult male.
- 50% of the adult female. (due to the fat)

2) Plasma:

- Plasma osm.=300 mOsm/Kg → mainly due to Na.
- Na = 140-145 meq/l → main EC cation. Preserved by the kidney.
- K = 4-5 meq/L main IC, 2 % EC. Rapidly excreted by the kidney
- pH = 7.36 – 7.44
- Most imp. Buffering system → HCO_3 = 22-26 mmol/l → regulated through the kidney
- HCO_3 : Carbonic acid = 20 : 1

	IC fluid	EC fluid		Corrected by
		Intra-vascular	Interstitium	
Components	2/3 BW differ in everything except osm.	1/4 → 5 % BW	3/4 BW differ only in pr. content	
↓ Water content	Dehydration → thirst	Circulatory collapse & oliguria	Sunken eyes ↓ skin turgor	Drinking water / if not possible (comatosed → Glucose 5 % (isotonic)
↑ Water content (usually iatrogenic)	Edema → esp. brain (convulsions…etc)	Distended neck veins	Generalized edema	Restrict the water intake, if not possible →hypertonic saline

	Hyponatremia	Hypernatremia	Hypokalemia	Hyperkalemia
Starts at	<120 meq/l	> 150	<3.5 mmol/L	
Etiology	• Water intoxication. (M/C) • GIT loss. • ECF loss → burns • Adrenal insuff.	• Water depletion. • True: - Conn's, Cushing. - rapid saline inf.	• GIT loss. • Alkalosis (see CHPS → paradoxic aciduria) • K losing diuretics. • Conn's & Cushing. • Insulin. / Prolonged TPN.	• ARF. • Acidosis. • Massive transfusion of stored blood.
C/P	IC edema with collapse, oliguria, sunken eyes, ↓ skin turgor	Pulls water from the cell → ↓ IC content & ↑ interstitial & vascular compartment That's we give diuretic! (see above)	• Ms. & nerve weakness. • hypotonia, paralytic ileus & distension, Incontinence, rapid shallow breathing • ECG →↑ QT, ↓ST & inverted T • ↑ sensitivity to Digitalis & hepatic coma	• GIT → NVA & diarrhea • ECG → peaked T wave, wide QRS • Bradyardia → heart block & arrest!!
TTT	IV saline or Ringer's	Na restriction + diuretics	• Oral K if possible. (Never more than 40 meq/h) • Never as a bolus.	• IV Ca glauconate → cardio-protective. • $NaHCO_3$ → to correct acidosis. • Glucose & insulin. • If failed → cation exchange resin or dialysis

	Metabolic Acidosis	Metabolic Alkalosis
Etiology	• DKA – Lactic acidosis • Renal failure. • Diarrhea, fistula. • Uretero-sigmoidostomy → hyper-choloremic Acidosis	• PYLORIC OBST → hypo-choloremic Alkalosis • Hypokalemia. • $NaHCO_3$ overdose. • Milk-alkali $.
C/P	• Kussmaul's breathing. (↑rate & depth → dehydration)	• Resp (-) →Cheyne-Stoke's • Tetany / of pyloric obstn.
TTT:	• Mild → the cause. • Sever (pH <7.3 or HCO3 <15 meq/l → IV HCO_3.	• Pyloric obst. → Isotonic saline. (NaCl) • hypokalemia → IV KCL • Tetany → Ca glauconate

ENDOCRINOLOGY

	1^{RY} HYPER-PARA-THYROIDISM	PHEOCHROMOCYTOMA
ETIOLOGY	• Single Adenoma. (M/C) • Multiple Adenomas. • PTH hyper-plasia. • Others (rare →(MEN $), carcinoma, ectopic. **PTH** → peptide hormone → ⊕ Osteoclasts, requires vit. D as a precursor ↑ in CRF, ↑ phosphorus excretion in urine!	**RARE, BUT THE M/C TUMOR IN ADRENAL MEDULLA!** **RULE OF 10???** • 10 % bilateral. • 10 % familial. (MEN IIa & b) • 10% in children. • 10 % MALIGNANT. • 10 % extra-adrenal. (UB, renal hilum, organ of Zukerkandl at Aortic bifurcation)
C/P	**BONES, STONES, GROANS, PSYCHIC MOANS.** • **EARLIEST** → ms weakness, NVA, polyuria & polydepsia. • **BONES** → starting in the phalanges then the skull. • **STONES** → of the kidney, or nephron-calcinosis. • **GROANS** → abd. pain due to acute pancreatitis or PU. • **MOANS** → emotional disturbance. NB: hypercalcemia → Pancreatitis → hypocalcemia	**"I THOUGHT I WAS GOING TO DIE!"** • **HTN**, blurring of vision, headache, anginal attacks, palpitation. • **METABOLIC** → DM, hyperthyroidism. • **SUDDEN DEATH DT** → IC hge & Arrhythmia.
INVEST.	• ↑ s. & urinary Ca. • ↑ ALP - ↑ PTH. • Radio-isotope scan → most diag. (SESTAMIBI SCAN)	• Screening → ↑ VMA in urine. • MIBG → in any adrenal medulla tumor. • MRI → most diagnostic.
TTT	• **ADENOMA** → excision of the affected gland. • **HYPERPLASIA** → subtotal para-thyroidectomy. • **POST-OP. CARE** → monitor the s. Ca coz it may fall in the 1^{st} 24-48 hs → give oral Ca or IV Ca if sever.	• **PREOP.** → Control BP → **α BLOCKERS 1ST THEN ββ? LABETALOL.** • **SURGERY** → via Ant. Trans-peritoneal approach. • **POSTOP.** → monitor the bl. P & the blood sugar level!
	(2)MEN → AD, 1^{st} degree relatives → 50 % develop the ds! • **MEN II a** → PTH HYPERPLASIA – PHEOCHROMOCYT**OMA** – MEDULLARY CARCIN**OMA.** • **MEN IIb** → PHEOCHROMOCYT**OMA** – MEDULLARY CARCIN**OMA** – MARFAN**OID** FACIAL FEATURES. (NO PARATHYROID)	

Post-Operative Wound inf.

	Clean	Clean contaminated	Contaminated	Dirty
	Sterile area	low numbers of resident flora	large numbers	Peritonitis.
Eg.	herniorraphe, Thyroidectomy, CNS, Cardiothoracic, Ortho	urological, oro-pharyngeal, appendectomy	IO → unprepared colon.	
% of post op. inf.	1-2 %	20-30 %	up to 60 %	>60 %
WITH ABC	& DOESN"T DECREASE → so no need for ABC prophylaxis	<10 % with ABC	15-20 % with ABC	40 % with ABC.

- **ABC prophylaxis** should be administrated 30 mins. b4 skin incision & 24 hrs. after to avoid resistance!
- **Selective decontamination of the GIT + Oral ABS** → ↓ nosocomial infections but not MR!
- **CLIPPING of hair** at the surgical site!
- **M/C cause of Post-op. wound infection** → presence of dead space!

Post-Operative Fever = 4Ws

Day	4 Ws	Cause
• 1st & 2nd day	Wind	Pneumonia – Atelectasis? Surgical trauma.
• 3rd – 5th day	Water	UTI.
• 4th – 6th day	Walking	DVT & pulmonary embolism.
• 5th to 7th or **4th – 10th day**	Wound inf.	
• 7th day	Wonder	**What did we do??** Drug fever - IV lines or catheters!

MISCELLANEOUS (1)

TUBULO-DERMOID CYSTS? EXPLAIN:

1) **THYROGLOSSAL CYST.**
2) **BRANCHIAL CYST.**
3) **ENCYSTED HYDROCELE OF THE CORD.**
4) **TERATOMATOUS CYSTS? EXPLAIN DERMOID** IN DETAILS + HINT ABOUT "TERATOMA OF TESTES" & "DERMOID CYST OF THE OVARY!
5) **MECHEL'S, VITELLINE & URACHAL CYSTS.**

STERNO-MASTOID TUMOR: CONG. TORTICOLLIS

- **ETIOLOGY** → interruption of the bl. supply of the middle somite → infarction → swelling → replaced by fibrous t. → torticollis.
- **C/P** → since birth or shortly after → painless firm swelling at the middle of sternomastoid →then torticollis towards the affected side & face looking to the opposite side!!
- **TTT** → division of the ms. at it's lower part. "**MYOTOMY**"

PHARYNGEAL POUCH:

- **DEF.** → Motility disorder dt Spasm in inf. Constrictor
- **ETIOLOGY** → Herniation through Killian's dehiscence! Crico & thyropharyngeus
- **SITE** → more on the lt. side. (as cystic hygroma, lymphoma, cleft lip)
- **C/P** → Dysphagia & more in females. / pre-malignant.
- **INVEST.** → Ba swallow & never endoscopy to avoid rupture.
- **TTT.** → Excision.

NB: 300 LNs in the neck.

	DD OF SWELLING IN POPLITEAL FOSSA	
	SEMI-MEMBRANOUS BURSITIS	**BAKER'S CYST**
1) AGE	Young age	Old Age
2) KNEE	Free.	Osteoarthrosis & effusion.
3) SITE	**MEDIAL** part of popliteal fossa. **ABOVE** joint line.	**CENTRE** of popliteal fossa. **BELOW** joint line.
4) CCC.	Disappears on knee flexion	Not affected.

Miscellaneous (2)

Don't Miss!

- **Blunt trauma** → solid organ injury → most commonly SPLEEN.
- **Penetrating** → vascular or hollow organ.
- **Splenic injury alone** → conserve, but if a part of multi-organ injury → remove.
- **Liver → Pringle's maneuver** → can stop the bleeding from the PV & HA **but not** the HV or IVC.
- **T-tube is inserted** *only if there's injury of extra-hepatic biliary tree*, but biliary fistula only → conserve.
- **Blunt trauma in children** differ from those in adults, but penetrating traumas are the same in both!
- **Post-splenectomy sepsis** → incidence ↓ with age.
- **Simple lacerations of the liver** → *don't require drainage unless they are deep.*
- **Hematomas of the pelvis & stable perinephric hematomas** lateral to the midline → should be kept undisturbed *but central retroperitoneal hematomas should be explored ,coz it may involve major vascular injuries.*
- **Initial approach to control it** → packing & preventing the contamination from the enteric injuries!
- **How to measure ICP?!** → venticulostomy.
- **1st line to ↓ ICT** → hyperventilation, then Mannitol.
  (Steroids has no beneficial role)

Trauma has a trimodal distribution:

1st peak	2nd peak	3rd peak
• Within minutes. • Due to major neuro or vascular injury. • TTT improves the outcome.	• 1st golden hour. • Due to (ABCD). • IC hematoma, major thoracic or abd. trauma.	• Within days or wks. • Due to sepsis or MOF.

Neck injuries:

Zone 1	Zone 2	Zone 3
• From suprasternal notch to cricoid. • Highest mortality.	• From the cricoid to the angle of mandible. • The most common. • Least mortality.	• Above angle of mandible • Most dif. to be explored • The 2nd mortality

